

# MOUNTAIN PEAKS IN A PRAIRIE SEA

CENTRAL MONTANA'S AMAZING ISLAND RANGES ★ BY E. DONNALL THOMAS, JR.



**OUT OF NOWHERE** Roughly 40 miles northeast of Bozeman, the Crazy Mountains rise from a sea of grassland and rangeland. This and central Montana's other island ranges provide geological and biological variety in a region characterized by mostly flat landscapes and prairie vegetation.

PHOTO BY CHRIS BOYER/KESTREL AERIAL SERVICES

Mid-September in central Montana often looks and feels like early August, despite the start of fall looming just a week or two away. Today, the temperature is hot enough to have left me sweaty after an easy uphill hike, and the arid landscape below lies painted in late summer shades of ocher. Yet the seasonal clock is ticking, and soon our first hard frost will remind us of winter's inevitable arrival.

My shotgun, bird dog, and desire for a dusky (blue) grouse dinner motivated this morning's climb, but now the view alone proves reward enough. From Collar Peak on the northern edge of the Judith Mountains, the overlook makes me feel like I'm on the top floor of a skyscraper looking down on the world. Conifers and scree confirm that I'm standing on a mountain, but most mountains love company, and no others lie between me and the Little Rockies 65 miles away across the Missouri.

The Judiths and the Little Rockies are among central Montana's island ranges, so named for their metaphoric resemblance to dots of land scattered across open ocean. While isolated from one another by definition, they share common geology, history, and significance to the people who know them.

All lie east of the Continental Divide, separated from the Rocky Mountain Front and each other by relatively flat, open terrain. Not everyone agrees on which ranges belong in this family. Geologist Lee Wood-



**FALL SPLENDOR** The Judith River flows northeast from the Little Belt Mountains toward the Missouri River past the South Moccasins, shown here, and the Judith Mountains.

ward identified the Big Snowies, Judiths, North and South Moccasins, Highwoods, Little Rockies, Bear Paws, and Sweet Grass Hills as island ranges, while others include the Crazyies and Little Belts. Encircled by grassland habitat at elevations of 4,000 to 5,000 feet, some of these isolated mountains rise as high as 8,600 feet in the Big Snowies (Greathouse Peak) and 11,200 feet in the Crazyies (Crazy Peak).

#### BULGING UNDER PRESSURE

Since the geology is important and most of these mountains share a common origin story, let's go back to the very beginning.

During the Paleozoic era—approximately 300 million BCE (before common era)—shallow seas covered most of Montana. Layers of sandstone, limestone, and shale remained when the water receded. During the Cretaceous era some 250 million years later, molten rock under pressure deep belowground began to push upward through the overlying crust, forcing huge plates of rock aside to form the Big Snowies, the lone island range formed by what geologists call “overthrust.”

The rest are laccoliths, created

when a sill (a horizontal layer of molten rock, or magma) bulged upward under pressure, moving the overlying crust ahead of it 50 million years ago.

Around 2 million BCE, sequential ice ages began. Glacial movement and streams generated by melting ice eroded the sedimentary layer on top of the upthrust rock, providing finishing touches to the island ranges we know today.

This ancient history explains how mountains—like the one I stood on that September morning—formed in isolation and in such stark contrast to the plains surrounding them. Similar geological forces also produced island ranges in other states, like South Dakota's Black Hills, the Wichita Mountains of southwestern Oklahoma, and Wyoming's Bighorns.

#### ISLAND LIVING

While geology is central to understanding island ranges, rocks are still just rocks. The story grows more interesting when the focus shifts to wildlife and people.

Abundant pictographs in many island ranges confirm their importance to Indigenous culture. The mountains served as landmarks and lookout points and as sites of vision quests and ceremonies such as the Sun Dance, still held each year in the Fort Belknap Reservation's Little Rockies. Not surprisingly, the first written description of Montana's island ranges came from Lewis



**HUMAN IMPRINTS** Above left: Pictographs along the Smith River in the Little Belt Mountains are reminders that people have been living in Montana's island ranges for thousands of years. Early pioneers couldn't farm the steep hillsides, but they found silver, gold, and gems in some of the prairie mountains. Above right: The Zortman-Landusky mine in the Little Rocky Mountains, where gold was discovered in 1868. Right: Ruby Gulch Mine near Zortman, circa 1910. Harmful residue from century-old mining operations in Zortman and Landusky require the state to treat water flowing into the Milk and Missouri rivers and Fort Belknap Indian Reservation.



and Clark. On May 25, 1805, on the Missouri River upstream from the mouth of the Musselshell River, William Clark wrote, “I saw mountains on either side of the river at no great distance. These mountains appear to be detached.” To the north were the Little Rockies and to the south, the Judiths.

The Judith River, flowing north past the latter mountains, received its English name four days later where it entered the Missouri. Wrote Meriwether Lewis: “Captain Clark, who ascended this river much higher than I did, thought it proper to call it Judith's River.” This tribute honored Clark's fiancée, Julia, whom he often called Judith. Had Clark used his beloved's formal name, the mountains north of my home might have become the Julias.

The arrival of more European Americans from the East soon brought change. The same geological forces that created the laccoliths carried gold and silver to the surface,



**A RARE GEM** One of Montana's two state gemstones, the cornflower blue Yogo sapphire is found only in Yogo Gulch in the Little Belts.

along with gemstones like the Little Belts' famous Yogo sapphires. By the end of the century, extensive mining operations were underway at Zortman (Little Rockies), Kendall (North Moccasins), and Maiden (Judiths). All but the first are now ghost towns. The people are long gone, but the mining companies left behind piles of mining waste that exposes pyrite-rich ore to oxygen, creating a chemical reaction that produces sulfuric acid, which leaches into nearby streams, killing insects and fish.

#### ALL ALONE

Some terrestrial wildlife have a tough time on island ranges. They can't easily move elsewhere if conditions sour. And their isolated populations lack genetic diversity, making them less able to endure environmental calamities and compete with more adaptable invasive species.

Mountain goats historically inhabited many western Montana mountains, but there are no records of their historical presence in the island ranges, despite ideal habitat. That's because mountain goats couldn't cross from, say, the Bridger Range to the Crazyies without being eaten by wolves and other prairie predators.

Starting in the 1940s, what was then called the Montana Fish and Game Department began trapping the goats and trucking them to appropriate habitat around the state, including the Highwoods, Big Snowies, and

Crazyies. The mountain goats generally thrived in their new homes. In fact, the annual mountain goat hunting harvest in island ranges now exceeds that in the species' native Montana mountains. Populations in the Crazyies and Highwoods have fared particularly well, though the Snowies herd failed, likely due to a lack of genetic diversity.

Cutthroats, both the westslope and Yellowstone subspecies, are Montana's only native trout east of the Continental Divide. Because trout need cold, clear water, mountain streams have always provided core habitat. Many small creeks in the Little Belts, Judiths, Highwoods, and Snowies once sustained populations of these iconic fish. The old Fish and Game Department (abetted by unauthorized “bucket biologists”) introduced non-native rainbow, brook, and brown trout to many of these waters that either outcompeted or hybridized with the native salmonids. “There are unfortunately few instances in which fish introduced to these drainages have not reduced the number or even eliminated aboriginal cutthroats,” says Clint Smith, Montana Fish, Wildlife & Parks fisheries biologist in Lewistown.

Wild turkeys represent a more successful introduction program. They were historically absent from Montana, likely because they could not survive deep snow and cold temperatures until farmers began raising corn, alfalfa, and other calorie-rich foods that helped the birds get through the winter. In



Montana's island ranges

- |                              |                          |
|------------------------------|--------------------------|
| 1. Big Snowy Mountains       | 6. Bear Paw Mountains    |
| 2. Judith Mountains          | 7. Sweet Grass Hills     |
| 3. Little Rocky Mountains    | 8. Crazy Mountains       |
| 4. Highwood Mountains        | 9. Little Belt Mountains |
| 5. North and South Moccasins | 10. Pryor Mountains      |

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**GOAT INTRODUCTIONS**

During the 1940s through '70s, wildlife crews transplanted mountain goats to several island mountain ranges. Vulnerable to predators on open grasslands, mountain goats could not colonize the ranges on their own. Crews captured the animals in nets then carried, carted, and drove them to suitable habitat in island ranges, where many populations are thriving today.



1954, Fish and Game released 13 wild-caught Colorado turkeys in the foothills of the Judith Mountains, at a location I can see from my deck. The birds thrived. Aided by further transplants, wild turkeys now inhabit many locations around the state, especially in the conifer-parkland habitat of the island ranges, though for uncertain reasons the big birds didn't take to the Little Belts.

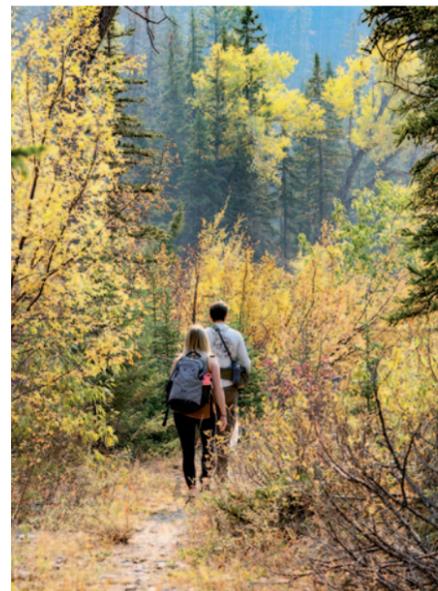
Pioneering ecologist Aldo Leopold observed that wildlife thrives along edges. Open savannah is the world's richest wildlife habitat—consider the estimated tens of millions of bison that once roamed the Great Plains—and within this grassland sea, island ranges create just the kind of edges Leopold describes. Many are steep and rugged, and, because of their relative inaccessibility, provided refuge for species such as elk and bears as human development displaced them from the open terrain where Lewis and Clark described them in such abundance.

**PUBLICLY OWNED**

People also benefit from habitat diversity—especially those of us who live here for the remarkable outdoor opportunities Montana has to offer. As patterns of land use and ownership change, access to public lands becomes increasingly more important. Fortunately, most of the island mountains wound up owned by all of us because no one else wanted that land during the agriculture-

driven Homestead Era. It's hard to grow grain in soil so devoid of moisture, much less atop a laccolith. As a result, the ranges are distinct from their surroundings not just due to geology and forest habitat, but because they include so much public property managed by the U.S. Forest Service, Bureau of Land Management, and State of Montana.

Unfortunately, our ability to see a mostly publicly owned mountain rising up in the distance does not guarantee access to it.



**ON GOLDEN TRAIL** Hikers head into the Big Snowy Mountains. Island ranges provide mountain recreation that helps boost local economies.

Though it's possible to drive around most island ranges in a morning, roads transecting them are few. What's more, most state and federal tracts are enclosed to varying degrees by private property whose owners may not grant access to public land beyond their boundaries. Fortunately, careful study of topographic and land-ownership maps can direct visitors to starting points accessible by vehicle, after which a good hike can get you deep into public property.

The island ranges' limited road access produces a paradox: inconvenient at times, but also providing a remote and often solitary wilderness experience.

These mountains enrich our lives in intangible ways. At first glance, eastern Montana prairie may not seem as spectacular as the peaks farther west. But we who live here value it in its own way. Many of us also enjoy mountain hikes, ice-cold mountain streams, and timbered ridges, and the island ranges provide opportunities to enjoy these important aspects of the Montana outdoor experience close to home. If they weren't here in central Montana, many of us likely wouldn't be either.

**UNIQUE WILDERNESS**

Great Falls resident Mark Good became well acquainted with island ranges during the 26 years he focused on the sites while working for the Montana Wilderness Association (now Wild Montana). "These mountains don't get the attention they deserve," he told

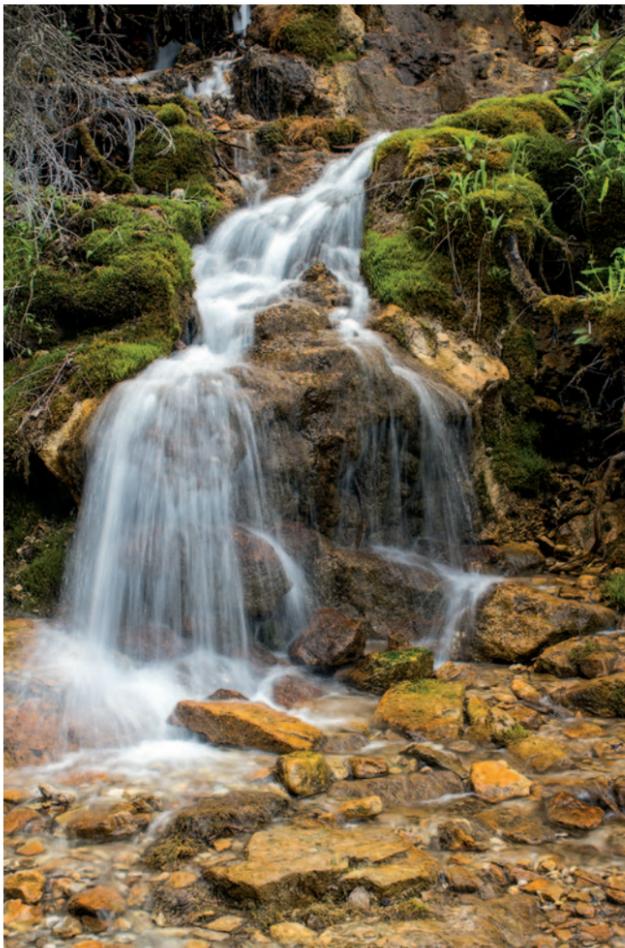


**HIGH AND LOW** Birdtail Butte and foothills in the Bear Paw Mountains (above) and Lost Lake in the Shonkin Sag, a glacial landform at the foot of the Highwood Mountains (below) show some of the scenic beauty and geological variety found in Montana's island ranges.



CLOCKWISE FROM TOP: LEFT: MONTANA FWP; DAN NICHOLS; LISA WRIGHT; MONTANA FWP

FROM TOP: JOHN LAMBEING; ROLAND TAYLOR



**ISLAND LIVING** Clockwise from top: Mixed-grass prairie surrounding the Sweet Grass Hills; sunrise over the Crazy Mountains; the author hunting sharp-tails in the North Moccasins; waterfall at the Crystal Cascades trailhead in the Big Snowies.



**HOME COMING** With support from the Wild Sheep Foundation and its state affiliate, FWP reintroduced bighorn sheep into the Little Belt Mountains with an initial release in 2021 of 49 animals captured in the Missouri River Breaks. Ancient pictographs in caves and on cliffs show that wild sheep previously occupied the Little Belts, which contain ideal habitat for the high-elevation animals.

me recently. “Each range is different, with its own personality and history. Most people associate Montana wilderness with vast areas like the Bob Marshall, but the island ranges offer their own unique versions of wilderness experience.”

For its part, FWP has been working to restore bighorn sheep and American martens to island ranges where they were historically present. (Learn more in the *Montana Out-*

*doors* articles “Cautiously Bringing Bighorns Back,” September-October 2021, and “Martens Come Home,” November-December 2022.)

**UNIQUE WILDERNESS**

It’s now mid-January, and the change in seasons I contemplated in September from the top of the Judiths has definitely arrived. Today’s view consists of snow-laden ridges rolling away to the west of my hard-earned

position high in the Little Belts. The initial motivation for today’s climb was a mountain lion track, although if my hunting partner and I do catch up to the cat (hardly a given), I don’t plan on shooting it with anything but my camera. The real value of today’s excursion is the pleasure of enjoying island range backcountry during winter, alone save for the lion hounds and a hunting partner who has somehow wandered off the track. As it often does, solitude has made me think.

What does the future hold for these mountains? For reasons ranging from socioeconomic to environmental, Montana is undergoing rapid change. Ever since first European contact, the people living here have found abundant ways of messing up our

mid-state mountains, from conducting irresponsible mining practices to eliminating species that should be here and introducing others that shouldn’t.

Giving me some optimism is the fact that central Montana’s island ranges have resoundingly withstood the test of time. I like to think that, given thoughtful management on our part, these prairie peaks will be around for another 50 million years. 🐾

**Accessing the island ranges**

Vehicle routes to public land in the island ranges:

**Little Belts**

Deadman’s Creek/South Fork Rd. (SW of Hobson); U.S. Hwy. 89 (SE of Monarch)

**Big Snowies**

Crystal Lake Rd. (S of Lewistown); Red Hill Rd. (SE of Lewistown)

**Judiths**

Ruby Gulch Rd. (NE of Lewistown); Maiden Rd. (NE of Lewistown)

**Little Rockies**

Landusky Rd. (S of Harlem); Seven Mile Rd. (SW of Malta)

**Highwoods**

Upper Highwood Creek Rd. (E of Great Falls)

**Bear Paws**

Bull Hook Rd. (S of Havre)

**Crazies**

Big Timber Canyon Rd. (NW of Big Timber); Shields River Rd. (NE of Wilsall)

**North Moccasins**

N. Kendall Rd. (N of Lewistown)

**Note:** The South Moccasins are effectively landlocked by private property. Access to the Crazy Mountains is subject to intense controversy and should be monitored for current information.

